

## REMARKS

Claims 1-10 and 23-34 are pending in the application. Claims 1-10 and 23-32 are rejected. Claims 1 and 23 are independent. Claims 33 and 34 have been added. Support for the claim language can be found throughout the initial disclosure.

### Rejection Under 35 U.S.C. § 103(a)

Claims 1-6, 8-10, 23-28 and 30-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 2,900,182 to Hinks (hereinafter "Hinks") in view of U.S. Patent No. 3,958,840 to Hickox (hereinafter "Hickox"). Applicant respectfully traverses this rejection for at least the following reasons.

Claim 1 recites, *inter alia*, "An annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough, wherein the member is made from a metallic material and at least partly defines a plurality of radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member, the annular shim member being substantially planar."

Claim 23 recites, *inter alia*, "An annular shim member having first and second opposing surfaces and a plurality of openings formed therethrough, wherein the member is made from a metallic material and at least partly defines a plurality of radially extending gas flow paths, the annular shim member being substantially planar."

Hinks discloses laminated bearings having shear spring properties. The bearings have alternate layers of metal and elastomer bonded to each other (see, claim 1 in Hinks). FIG. 7 in Hinks shows the bearing being provided with a central aperture that is defined by the alternate layers of elastomer and metal (see, col. 9, lines 30-42 in Hinks).

As conceded in the Office Action, Hinks does not disclose the metallic members have a plurality of openings. However, the Office contends that Hickox discloses that it is known in the thrust bearing art to construct metallic members with a wire screen construction to improve production and lower costs, and that it would have been obvious to one of ordinary skill in the art to make the member in Hinks with the wire screen disclosed by Hickox. Applicant respectfully disagrees.

Hickox discloses a flexible bearing (flexible bearing 5 shown in FIGS. 1 and 2 in Hickox) constructed of layers of elastomer and rigid shims (shims 6 shown in FIGS. 1 and 2 in Hickox), alternately stacked and bonded together. At least some of the rigid shims are

replaced with flexible reinforcements of refractory cloth or wire screen (wire screen 9 shown in FIG. 3 in Hickox). The reinforcing material minimizes the number of rigid shims required (see, Abstract in Hickox and col. 2, lines 20-37 in Hickox). The wire screen 9 may be welded or soldered at intersections of the strands. The wire screen 9 provides sufficient strength to maintain dimensional stability of the elastomer under heavy loads that may be imposed upon it by propulsive gases in combination with stresses impressed by hydraulic actuators (see, col. 2, lines 29-37 in Hickox).

As can be seen in FIG. 3 of Hickox, all of the segments of the mesh 9 are welded at intersections 4 (see, col. 2, lines 41-43 in Hickox). Therefore, mesh 9 does not have a plurality of radially extending gas flow paths for communicating a radially interior side of mesh 9 with a radially exterior side of mesh 9. Indeed, the presence of welds at intersection 4 of wire mesh 9 would not allow a flow of gas to pass radially above the first surface and below the second surface.

In response to the arguments filed on December 17, 2010, the Examiner refers to FIG. 3 in Hickox and contends that the intersection 4 are knuckles that protrude to provide channels that at least partly define radially extending flow paths. Applicant respectfully disagrees.

There is nothing in Hickox that discloses that the intersections 4 are knuckles much less that the intersections 4 are protruding. FIG. 3 does not show that intersections 4 are protruding. FIG. 3 merely depicts that vertical wires and horizontal wires 9 are connected/welded at intersections 4. Clearly, FIG. 3 is simply a top view of the wire screen and as such does not provide any information as to the presence of protruding knuckles. One of ordinary skill in the art when reviewing FIG. 3 and the related description would not conclude that the intersections 4 are protruding.

Along these lines, *per* MPEP 2125, “[w]hen the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value.” Emphasis added. Hickox does not disclose that its drawings are to scale. Nor does Hickox provide any information as to the size of the intersections 4 and the wire screen 9. Thus, it cannot be concluded from FIG. 3 of Hickox that the intersections 4 are protruding, let alone that the intersections 4 provide channels that at least partly define radially extending flow paths, as contended by the Examiner.

Furthermore, Hickox does not disclose a “substantially planar” wire mesh. Hickox discloses a frusto-conical annular wire screen. A frusto-conical annular wire is completely different from a substantially planar wire screen.

In addition, even if the wire mesh of Hickox were disposed within the alternating rubber layers of Hinks, the structure of the wire mesh in Hickox would further prevent any radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member. Indeed, even if the wire mesh of Hickox were to be placed between two opposite layers, because the wire mesh of Hickox does not have protrusions, there would be necessarily no radial paths as claimed. Moreover, because of the soft nature of rubber, the rubber layer would further fill in the openings within the wire mesh of Hickox and thus further prevent any gas flow paths.

In addition, there is no suggestion, motivation or any objective reason to combine Hickox and Hinks as suggested by the Office. Clearly, there is no reason for one of ordinary skill in the art to use the wire screen in Hickox in place of the metallic layers in the laminated bearings of Hinks, as the metal and elastomer layers in Hinks are bonded to each other in order to provide desired loading characteristics that are needed in bearings.

In fact, Hinks states, in col. 2, lines 25-30, that “in order to permit high unit loadings with negligible compression and to prevent extrusion of the rubberous material from between the plates, while allowing satisfactory deflection characteristics, the bearing must be designed to comply with certain dimensional ratios which have been found to be controlling in such design.” (Emphasis added).

Therefore, Hinks teaches against using metallic plates having openings, otherwise the rubber between the metallic plates would extrude through the opening. Hinks teaches that this is undesirable because this would alter the deflection characteristics of the load bearing. Therefore, one ordinary skill in the art would not be motivated to provide wire mesh plate in place of the metallic layer or plates of Hinks, as this would destroy the intended function of the load bearing.

In response to the arguments filed on December 17, 2010, the Examiner contends that “Hinks refers to the prevention of rubber material extruding ‘from between the plate’ due to compressive force” and thus asserts that “there is no teaching or suggestion that the use of metallic plates with opening would result in the elastomeric material extruding from the plate.” See Office Action at page 10. Applicant respectfully disagrees.

Applicant refers to the statement in col. 2, lines 25-30 in Hinks to specifically show that rubber can extrude through an opening be it on the side of plates or through an opening within the plates. If Hinks is already putting extra care for selecting appropriate dimensions to prevent extrusion of rubber between the plates, Hinks would in effect be led to not select plates having openings to avoid extrusion of rubber through the openings. Therefore, one of ordinary skill in the art would certainly not use plates with metallic openings between compressed rubber. This clearly teaches away from providing a wire mesh plate in place of the metallic layer or plates of Hinks, as this would destroy the intended function of the load bearing of Hinks.

Furthermore, even if, *arguendo*, one were to make the metallic plates in Hinks with the wire screen disclosed by Hickox, which Applicant does not concede, as stated above, the wire mesh of Hickox being disposed between rubber layers would certainly prevent the formation of a plurality of radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member. Furthermore, the rubber being in contact with the wire mesh would prevent any radial flow of gas as the wire mesh would not define a plurality of radially extending gas flow paths.

Consequently, for at least the above reasons, neither Hinks nor Hickox, alone or in combination, disclose, teach or suggest the subject matter recited in claims 1 and 23. Therefore, Applicant respectfully submits that claims 1 and 23 are patentable over the purported combination of Hinks and Hickox.

Claims 2-6 and 8-10 depend from claim 1. Claims 24-28 and 30-32 depend from claim 23. Therefore, claims 2-6 and 8-10 and claims 24-28 and 30-32 are patentable at least by virtue of their dependence upon claim 1 and claim 23, respectively, and for the additional subject matter recited therein.

Thus, it is respectfully requested that the rejection of claims 1-6, 8-10, 23-28 and 30-32 under 35 U.S.C. § 103(a) over the purported combination of Hinks and Hickox be withdrawn.

Claims 4, 5, 7, 26, 27 and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 2,900,182 to Hinks (hereinafter "Hinks") in view of U.S. Patent No. 3,958,840 to Hickox (hereinafter "Hickox") and further in view of U.S. Patent No. 4,227,858 to Donguy (hereinafter "Donguy"). Applicant respectfully traverses this rejection for at least the following reasons.

Claims 4, 5, 7, 26, 27 and 29 depend from claim 1 or claim 23. Therefore, claims 4, 5, 7, 26, 27 and 29 are patentable over the purported combination of Hinks and Hickox at least by virtue of their dependence from claim 1 and claim 23 and for the additional subject matter recited therein.

Donguy fails to cure the deficiencies noted above in the purported combination of Hinks and Hickox. Donguy is relied upon as allegedly disclosing metallic layers with thickness of about 0.8 mm. Donguy does not disclose, teach or even suggest the subject matter recited in claims 1 and 23. Consequently, none of Hinks, Hickox or Donguy, alone or in combination, disclose, teach or suggest the subject matter recited in claims 4, 5, 7, 26, 27 and 29.

Therefore, Applicant respectfully submits that claims 4, 5, 7, 26, 27 and 29 are patentable over the purported combination of Hinks, Hickox and Donguy. Thus, it is respectfully requested that the rejection of claims 4, 5, 7, 26, 27 and 29 under 35 U.S.C. § 103(a) over the purported combination of Hinks, Hickox and Donguy be withdrawn.

Claims 1-6, 8-10, 23-28 and 30-32 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,958,840 to Hickox (hereinafter "Hickox") in view of U.S. Patent No. 2,900,182 to Hinks (hereinafter "Hinks"). Applicant respectfully traverses this rejection for at least the following reasons.

The Office contends that Hickox discloses a shim member is a metallic wire screen comprising openings. The Office contends that the wire screen openings correspond to the claimed plurality of radially extending gas flow paths. Applicant respectfully disagrees.

The plurality of wire screen openings do not correspond to the plurality of radially extending gas flow paths. The term "radially" means along or in a direction of a radius. Clearly, the openings within the wire mesh of Hickox are not radially extending flow paths (in a direction of a radius of an annular wire mesh). Indeed, as can be clearly seen in FIG. 3 of Hickox, all of the segments of the mesh 9 are welded at intersections 4. Therefore, the mesh in Hickox does not have a plurality of radially extending gas flow paths for communicating a radially interior side of the mesh with a radially exterior side of the mesh. Indeed, the presence of welds at intersection 4 of the wire mesh would not allow a flow of gas to pass radially above the first surface and below the second surface.

In addition, as described in col. 3, lines 26-40, Hickox teaches that a "valuable and unexpected result" of the method of manufacturing the flexible bearings is that "the layers 7

of elastomer extrude through the openings in the screen or cloth reinforcing layers and weld together.” Thus, there are clearly no gas flow paths in the Hickox bearing, since the adjacent elastomer layers extrude into any openings and weld together, and Hickox therefore further teaches away from the present invention.

Furthermore, as conceded by the Office, Hickox does not disclose a “substantially planar” shim, as presently claimed. Hickox discloses a frusto-conical annular wire screen. The Office, however, contends that Hinks discloses that it is known in the thrust bearing art to construct a bearing in any desired shape such as conical or planar. The Office contends that it would have been obvious to one of ordinary skill in the art to make the shim member in any bearing shape such as planar.

In response to the arguments filed on December 17, 2010, the Examiner contends that Hinks discloses that it is known in the thrust bearing art to construct a thrust bearing in any desired shape such as frusto-conical or planar and thus it would have been obvious to one of ordinary skill in the art to make the shim member in Hickox in any known shape such as planar. Applicant respectfully disagrees.

There is no suggestion, motivation or reason to provide a wire screen with a planar configuration as Hickox teaches a particular type of bearing, intended for use as a flexible joint between a rocket case and a movable thrust nozzle, and in which the layers conform to surfaces of concentric spheres (see, e.g., col. 1, lines 37-51; col. 2, lines 50-58).

In FIG. 7, Hinks appears to show alternate planar layers of metal and elastomer bonded to each other. FIG. 7 in Hinks shows the bearing being provided with a central aperture that is defined by the alternate layers of elastomer and metal (see, col. 9, lines 30-42 in Hinks). However, there is no suggestion, motivation or reason to modify the conical wire mesh of Hickox and provide a wire mesh with a planar configuration. In fact, the flexible bearing of Hickox is clearly conical. Therefore, the reinforcing material or wire screen 9 has also a conical shape. There is absolutely no reason to use an annular flat configuration as shown in FIG. 7 in Hinks in the conical bearing of Hickox.

If one were to use the annular flat configuration of Hinks in the bearing of Hickox, which Applicant does not concede is possible, the annular flat configuration of Hinks would have to be reshaped into a conical configuration so as to be incorporated into the bearing of Hickox. However reshaping the annular configuration of Hinks into a conical shape would result in a conformation that is completely different from the claimed annular shim member.

In addition, even if, *arguendo*, one were to modify the conical wire mesh of Hickox and provide a planar wire mesh, which Applicant does not concede, the wire mesh of Hickox being disposed between rubber layers of Hinks would certainly prevent the formation of a plurality of radially extending gas flow paths for communicating a radially interior side of the member with a radially exterior side of the member. Furthermore, the rubber being in contact with the wire mesh would prevent any radial flow of gas as the wire mesh would not define a plurality of radially extending gas flow paths.

Consequently, for at least the above reasons, neither Hinks nor Hickox, alone or in combination, disclose, teach or suggest the subject matter recited in claims 1 and 23. Therefore, Applicant respectfully submits that claims 1 and 23 are patentable over the purported combination of Hickox and Hinks.

Claims 2-6 and 8-10 depend from claim 1. Claims 24-28 and 30-32 depend from claim 23. Therefore, claims 2-6 and 8-10 and claims 24-28 and 30-32 are patentable at least by virtue of their dependence upon claim 1 and claim 23, respectively, and for the additional subject matter recited therein.

Thus, it is respectfully requested that the rejection of claims 1-6, 8-10, 23-28 and 30-32 under 35 U.S.C. § 103(a) over the purported combination of Hickox and Hinks be withdrawn.

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Donguy fails to cure the deficiencies noted above in the purported combination of Hickox and Hinks. Donguy is relied upon as allegedly disclosing metallic layers with thickness of about 0.8 mm. Donguy does not disclose, teach or even suggest the subject matter recited in claims 1 and 23. Consequently, none of Hickox, Hinks or Donguy, alone or

in combination, disclose, teach or suggest the subject matter recited in claims 4, 5, 7, 26, 27 and 29.

Therefore, Applicant respectfully submits that claims 4, 5, 7, 26, 27 and 29 are patentable over the purported combination of Hickox, Hinks and Donguy. Thus, it is respectfully requested that the rejection of claims 4, 5, 7, 26, 27 and 29 under 35 U.S.C. § 103(a) over the purported combination of Hickox, Hinks and Donguy be withdrawn.

Claims 33 and 34 have been added. Support for the claim language can be found throughout the initial disclosure, for example, in page 7 of the specification. Claim 33 depends from claim 1 and claim 34 depends from claim 23. Therefore, claims 33 and 34 are patentable at least by virtue of their dependence upon claims 1 and 23, respectively, and for the additional subject matter recited therein.

#### CONCLUSION

Having addressed each of the foregoing rejections, it is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, the application is in condition for allowance. Notice to that effect is respectfully requested.

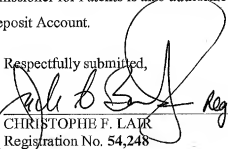
If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

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Respectfully submitted,

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